

depend more upon speculation than upon prophecy, because as yet, except in the classical records of the armies recruited in the Civil War, anthropological statistics are not available.

The extent of this foreign invasion of the country is stupendous. Twenty-five million emigrants have landed since 1820, and in 1907 no fewer than one and a quarter million souls were added to the population; and, what is still more remarkable, the source of supply has completely changed in recent years. A quarter of a century ago two-thirds of the annual immigration was in origin Teutonic or Anglo-Saxon; at present less than one-sixth is derived from this source. The newcomers are now mainly south Italian, Russian, or Austro-Hungarian. "We have even tapped the political sinks of Europe, and are now drawing large numbers of Greeks, Armenians, and Syrians." Ninety per cent. of the tailors of New York are Russo-Polish Jews; all day labourers, once Irish, are now Italian; fruit-vendors, once Italian, are now Greek. Chicago is now the second Bohemian, the third Swedish, the fourth Polish, the fifth German city in the world.

The question then arises, Will these racial groups coalesce into a more or less uniform American type? In dealing with this problem, Prof. Ripley discusses the causes which promote and those which operate to prevent the union of these races. On the one hand, as tending to combination, he notices the extreme mobility of the newer industrial immigrants, and their readiness to wander into the most distant parts of the country in search of employment; the inequality of the sexes, males being in a large majority, which results in marriage of the newcomers with locally born women. In this connection, he remarks the tendency of the male as he rises in the world endeavouring to improve his social position by marrying into a class higher than his own. The main cause which checks further union of the races is the concentration or segregation of the immigrants in compact industrial colonies or in the large cities of the west. While the Teutonic races wander far afield as colonists, the Mediterranean, Slavic, and Oriental races herd in the towns.

An investigation of marriage statistics brings out many interesting facts. Even in the case of the Jews, the most exclusive of peoples, there is more intermarriage than is commonly supposed, the Jews in Boston constantly taking as wives Irish or Irish-American women. All the facts of marriage and birth-rates, however, indicate a relative submergence of the Anglo-Saxon stock in the near future. While the birth-rate among them is steadily declining, the fecundity of the foreign races newly arrived in the country shows little signs of diminishing. In Massachusetts the birth-rate of these two races is in the proportion of about one to three. This superiority will probably not be maintained, as even now the fecundity of the foreigners seems to be diminishing after the second generation; but their vitality under a favourable environment is remarkable.

As Prof. Ripley observes, this race struggle is only in its very earliest stage, and it remains to be seen whether the Anglo-Saxon will be able to preserve and transmit his characteristic culture over these hordes of foreigners.

America, including Canada, is thus confronted with a novel series of problems, racial and social, and to add to these she has to deal with a fresh set of difficulties connected with the Negro and the Filipino, with which Prof. Ripley was unable to deal in this address. He cherishes a pious hope that a satisfactory solution will be attained; but this lies in the lap of the future, and it will be well that this notable address should attract on both sides of the Atlantic the attention which it deserves.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The general board of studies recommends the appointment of an assistant to the Quick professor of biology. It is proposed that Prof. Nuttall should appoint him with the approval of the Vice-Chancellor; the appointment will terminate on the appointment of a successor to the present professor. It carries with it a stipend of 100*l.* a year.

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It is suggested to increase the stipend of the curator of the botanic garden to 350*l.* a year. It is now nearly thirty years since the present curator was appointed, and the position the Cambridge Botanic Garden now occupies is largely due to Mr. Lynch's ability and devotion.

PROF. R. C. MACLAURIN, professor of mathematical physics in Columbia University, and previously professor of mathematics in the University of New Zealand, has accepted, we learn from *Science*, the offer of the presidency of the Massachusetts Institute of Technology.

THE Chelsea Secondary School for Girls was formally opened on November 20. The school was originally part of the South-Western Polytechnic, and the transfer was effected in September last. The new buildings are situated in Hortensia Road, and represent the first school building expressly designed and erected by the London County Council for the secondary education of girls. The aim of the new school is to provide a liberal education for girls up to the age of eighteen or nineteen years. The claims of science to a prominent place in the school curriculum have been duly recognised, and ample accommodation has been provided for the practical study of chemistry, physics, and botany. The home arts are to be taught, and suitable rooms have been arranged for this purpose, as well as for practical work in geography.

The report of the principal of the Bradford Technical College for the session 1907-8 shows that the total number of students in attendance during the session was virtually the same as in the previous year; but there was, unfortunately, a fall in the number of day students from 242 to 217. The average age of these students at the commencement of the session was nineteen years, as compared with eighteen years five months at the corresponding period of 1906. We notice that a new scholarship scheme has been adopted during the session. It provides opportunity for the transference of evening students of exceptional ability to the day courses, and offers special scholarships for apprentices in works. In order to carry the specialised training to as high a point as practicable, a number of fourth-year scholarships are offered to day students who have completed their three years' course, and as a recognition of the necessity for securing the best brains and the highest possible preliminary training a certain number of entrance scholarships are awarded on merit alone. The scheme affords evidence of the desire that all sections of the community should have equal facilities, as they have an equal claim to the advantages of the college training. The scheme for building a new block for the accommodation of the department of textile industries on an adjoining site already purchased has taken definite shape; detailed plans are being prepared, and building is to be begun shortly. The staff of the department of chemistry and dyeing has been strengthened with the view of the encouragement of research work in the college. The testing laboratory of the department of textile industries has been employed to a much greater extent than previously in carrying out investigations for the trade. It is pleasing to note that the advantages offered to manufacturers and others are being more fully realised.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, November 13.—Dr. C. Chree, F.R.S., president, in the chair.—The photoelectric properties of potassium-sodium alloy: Dr. Fleming. It is well known that, under the action of ordinary and ultra-violet light, the electro-positive metals lose a negative charge of electricity, the effect being most pronounced in the case of rubidium, potassium, and the liquid alloy of potassium-sodium. Potassium and sodium are melted together and then decanted over into a chamber containing a platinum plate, so that a mass of the liquid potassium-sodium alloy having a perfectly clean surface was obtained in a glass tube, and a platinum plate was fixed above it in an inclined position.

By means of platinum wires sealed through the glass tube, a contact is made respectively with the platinum plate and the liquid alloy. When the surface of the alloy is illuminated by a powerful beam of light, and the galvanometer connected to the platinum plate and alloy, it is found that a current is produced in this circuit merely by the action of the light, and by balancing this current against a variable electromotive force it was shown that an electromotive force varying from 0.4 to 0.8 of a volt is produced in the photoelectric cell due to the action of the light. This photoelectric effect was greatly dependent on the colour of the light, and especially upon light absorbed by the alloy. It is greatly diminished by making even a feeble magnetic field parallel to the surface of the alloy. Some questions were discussed tending to show that the source of the photoelectromotive force cannot be identical with the volta-contact electromotive force in the circuit, but is due to the absorption of light by the sensitive surface. In all cases of such photoelectric action, the rays which are effective in producing it are those given out by the substance if heated or otherwise made radiant. Thus, zinc is photoelectric under the action of ultra-violet light, and ultra-violet light is largely radiated when an electric spark is taken between the zinc balls, or an electric arc between zinc poles. The photoelectric effects in the case of potassium are probably due to the absorption of the violet ray emitted by potassium when heated.—Electric splashes on photographic plates: **A. W. Porter**. The author showed, by means of transparencies, the effect of a normal magnetic field upon the patterns which appear in developing a photographic plate which is placed between two terminals between which a sudden discharge passes. This effect is confined to the main line of discharge, and consists in this line being broadened into a band of nearly constant width; a very similar result is obtained if a blast of air sweeps across the plate instead of the magnetic field being employed. This broad band is produced by the glowing gas which surrounds the spark itself. The palm-like figures and the ramifications leading up to them do not seem to be modified by the magnetic field, and the author concludes that these figures are, therefore, determined by events independent of the motion of the changes conveyed along them, or else that the moving charges have a very large mass associated with them.—An anomaly in the lagging of thin wires and narrow pipes: **A. W. Porter**. When thin wires and narrow pipes are covered with a lagging material, it is not possible at once to say whether the covering will keep heat in or assist it to escape. There is a critical radius equal to the ratio of the conductivity of the material to the emissivity from its surface which the outer covering must exceed before it begins to act as a lagger. Although this seems to have been recognised by Prof. Bottomley and others, the results of experiments which have previously been made would seem to indicate that the effect in practice is very small indeed. The author showed a simple lecture experiment in which a large effect is obtained.—The rate of growth of viscosity in congealing solutions: **A. O. Rankine**. The author exhibited apparatus and described experiments for the determination of the time variation at constant temperature of the viscosity of gelatin solutions of high concentration.—Note on the re-combination of ions in air: **Dr. Phillips**.

Royal Astronomical Society, November 13.—**Mr. H. F. Newall**, president, in the chair.—Photographs of comet *c* (Morehouse), taken at the Royal Observatory, Greenwich: **Astronomer Royal**. The first photograph was obtained on September 4, and subsequent plates showed such remarkable changes that it was arranged that the comet should be photographed at very short intervals. **Mr. Davidson** and **Mr. Melotte** had obtained a long series of negatives, often at intervals of an hour or less, and lantern slides from these were shown on the screen. They were mostly taken with the 30-inch reflector, a shorter series being obtained with a 3½-inch portrait lens. The tail exhibits a recurring series of phases, and the phase seems to bear a relation to the condition of the nucleus, which passes through cycles of alternating activity and quiescence. A series of photographs taken by **Prof. Barnard** with various lenses at the Yerkes Observatory was shown on the

screen, and **Mr. Percy Morris** showed another series taken by himself. **Father Cortie** said that his measures of the plates showed that matter ejected from the nucleus moved with an accelerating velocity. The **Astronomer Royal** and the president directed attention to dark rays in some of the photographs.—Note on the number of faint stars with large proper motions: **H. H. Turner**. The number of faint stars with motions of more than 20" per century was singularly small.—The absorption of light in its passage through interstellar space: **H. H. Turner**. If the universe is infinite, the number of stars would theoretically be four times greater for each fainter magnitude, but, as observed, it was only three times greater. The hypothesis that light is absorbed by scattered material particles would apparently explain the discrepancy, and photography with coloured screens was suggested as a crucial test.—**Mr. Cookson** showed **Prof. Hale's** spectroheliographs, exhibiting vortex motion on the solar surface, especially connected with sun-spots. Vortices north and south of the solar equator appeared to move in opposite directions.—The calendar dates in Aramaic papyri from Assuan: **J. K. Fotheringham**.—Note on the regnal years in the Aramaic papyri from Assuan: **E. B. Knobel**.

Zoological Society, November 17.—**Prof. E. A. Minchin**, vice-president, in the chair.—A new genus and species of slow-lemurs from the Lushai Hills, Assam: **Dr. N. Annandale**. The animal is known only from a photograph of two individuals taken in 1889 by **Mr. T. D. La Touche**, and resembles *Nycticebus* in appearance, but has a long, bushy tail, which distinguishes it from all known Oriental lemurs.—Contributions to the morphology of the group *Neritacea* of aspidobranch gastropods, part i., the *Neritidae*: **Prof. G. C. Bourne**. As a result of the comparative study of the anatomy of several species of marine, estuarine, and freshwater *Neritidae*, the author found that the forms hitherto classed in the genera *Nerita*, *Neritina*, and *Septaria* fall into three well-known groups of sub-generic value, the chief distinctive characters relating to the accessory genital organs. The investigation had been pursued by the study of sections as well as by dissections, and a number of important anatomical results were set forth.—An account of the expedition organised to collect in the Ruwenzori range of mountains in Equatorial Africa: **W. R. Ogilvie-Grant**. The results were extremely successful, amongst the specimens obtained being 404 *Mammalia*, 2470 *Aves*, 135 *Reptiles* and *Batrachia*, 31 *Pisces*, and a very large number of invertebrates. A number of memoirs on the zoological results of the expedition were presented to the meeting, and will be published in the *Scientific Transactions* of the society.

Mineralogical Society, November 17.—**Prof. H. A. Miers**, F.R.S., president, in the chair.—Mica from North Wales and chlorite from Connemara: **A. Hutchinson** and **W. Campbell Smith**. A mica from Tan-y-bwlch, North Wales, is found in pale green scales in quartz veins, and approximates closely in composition to the variety of muscovite known as sericite. A chloritic mineral from Recess occurs in transparent hexagonal plates in the quarry whence the Connemara marble is obtained. It is nearly uniaxial and positive, and was found on analysis to have the composition of penninite.—The occurrence of the rare mineral carminite in Cornwall: **A. Russell**. This mineral, an arsenate of iron and lead, first found at Horhausen, Rhenish Prussia, and described by **F. Sandberger** in 1850, was discovered in Cornwall by the author in 1906. It occurs as carmine-red or brown needles on crystallised scorodite, mimetite, &c., from Hingston Down mine. This adds one more species to the already long list of rare minerals yielded by Cornwall.—Russian universal instruments and methods: **T. V. Barker**. Several of the universal instruments devised, and kindly lent, by **Prof. E. Fedoroff** were exhibited, and the method of working explained. Among the instruments described were the hemisphere and graduated rotatory quartz compensator of **Prof. V. Nikitin**, the stereographic rule, circle-ruler, graduated mica and quartz compensators, universal crystal mirror-models and globes, the microdichroscope, and the universal microscope-stage. The great utility of the latter

was demonstrated by the actual determination (using a simple projection apparatus and screen) of the optical constants, twin-law, and chemical composition of a plagioclase twin. Methods of determining birefringence and the thickness of a section were discussed, and emphasis was laid on the special usefulness of the three-legged compasses in rapid calculations by graphical methods.—The composition of the Chandakapur meteoric stone: H. E. **Clarke** and H. L. **Bowman**. This meteorite, which fell in India in 1838, is of chondritic type, with numerous chondrules of varying structure, and consists principally of olivine and bronzite, and about 5 per cent. of nickel-iron.

Geological Society, November 18.—Prof. W. J. Sollas, F.R.S., president, in the chair.—Some intrusive rocks in the neighbourhood of Eskdale (Cumberland): Dr. A. R. **Dwerryhouse**. There appear to be five well-marked groups of intrusions in this district:—(a) the andesitic dykes of Allen Crag and Angle Tarn; (b) the dykes of the spherulitic group on Yewbarrow and High Fell; (c) the dioritic bosses of Peers Gill, Lingmell Crag, and Bursting Knotts; (d) the Eskdale Granite; (e) the dolerite-dykes. The dykes of series (a) bear a petrological resemblance to the Borrowdale volcanic rocks, into which they were intruded. They appear to be of Borrowdale age, and roughly contemporaneous with the lavas and ashes into which they are intruded. The spherulitic series (b) are considered to be also of Borrowdale age, though probably somewhat later, and the rocks of group (c) to be the holocrystalline equivalents of the Borrowdale lavas, and they also are probably of Ordovician age. The Eskdale Granite (d) is more acid. It is undoubtedly intrusive into the Borrowdale series, but seems to be pre-Triassic. The intrusion is probably Devonian. The basic intrusions (e) have been examined only where they come into proximity to the granite.

Linnean Society, November 19.—Dr. D. H. Scott, F.R.S., president, in the chair.—The optical behaviour of the epidermal cells of leaves (see NATURE, November 19, p. 86): H. **Wager**.—A new species of Symphyla from the Himalayas: Prof. A. D. **Imms**.—The freshwater Crustacea of Tasmania, with remarks on their geographical distribution: G. **Smith**.

Royal Anthropological Institute, November 24.—Prof. W. Gowland, F.R.S., past-president, in the chair.—Primitive pottery and iron-working in British East Africa: W. S. **Routledge**. After explaining the method of obtaining fire by friction adopted by the natives, the author proceeded to demonstrate the method by which pots were made. No wheel is used, but the pot is most carefully worked up by hand. An interesting feature is that the pot is made in two parts. All pottery is made by the women. The interest of the description was greatly heightened by an exhibit of pottery in all the different stages of manufacture. With regard to iron working, the author explained the manner in which the iron is washed from the sand and the way in which it was smelted in a large crucible dug out of the earth. From the iron thus obtained implements are made, and a large selection of examples was exhibited. Iron wire is also drawn, and the author gave a demonstration of the manner in which this is done.

CAMBRIDGE.

Philosophical Society, October 26.—Note on Russo's attempt to show differentiation of sex in the ovarian ova of the rabbit: W. **Heape**.—A further note on the eggs of the hermaphrodite *Angiostomum nigrovenosum*: S. A. **McDowall**.—Plemelj's canonical form: J. **Mercer**.—Monotone sequences of continuous functions: Dr. **Young**.—The operator reciprocants of Sylvester's theory of reciprocants: Major P. A. **MacMahon**.

November 9.—Prof. Sedgwick, president, in the chair.—The carriers of the positive charge of electricity given off by hot metals: Sir J. J. **Thomson**. The paper contains an account of measurements e/m for the carriers of the positive electricity given off by incandescent metals. The method used was that described in a paper by the author

on rays of positive electricity in the *Philosophical Magazine* for October, and is an improvement on that used by him to measure e/m for the particles given out by hot wires some years ago. The values of e/m given in the present paper, taken in conjunction with other evidence, suggest that the carriers of the positive electricity given out by hot wires are mainly molecules of carbon monoxide.—The weight of a corpuscle on the electrical theory of gravitation: Sir J. J. **Thomson**. It was shown that, on the theory that gravitation was due to slight differences between the forces between like and unlike charges of electricity, the acceleration of a corpuscle under gravity might be expected to be about one thousand times the acceleration of ordinary matter.—The distribution of electric force along the striated discharge: Sir J. J. **Thomson**. A Wehnelt hot-line kathode was used to produce the discharge, as it was found that at low pressures the striations produced in this way were remarkably steady and bright, and in consequence made accurate measurements of the distribution of electric force much easier than with the ordinary discharge. It was found that just in front of the bright surface of a striation towards the kathode there was a reversal of the electric force. This reversal causes a great accumulation of ions in the part of the striation nearest the kathode; the re-combination of the ions in this region will therefore be much greater than elsewhere, and it is shown that a very simple explanation of the formation and behaviour of striations was given by the hypothesis that the re-combination of the ions was the source of the luminosity in the striations.—Note on the radio-activity of rubidium: N. R. **Campbell**. Measurements on rubidium have been made similar to those on potassium described in a recent communication. It is shown that the rays from rubidium are less penetrating than those from potassium, but that the total activity of the former metal is some seven times as great as that of the latter.—The free pressure in osmosis: L. **Vegard**. The work contains a series of experiments made in order to obtain some information regarding the mechanism underlying osmotic phenomena. The experiments consist in the determination of osmotic velocities developed in a membrane of copper ferrocyanide by solutions of cane sugar of different concentrations, together with the determination of the resistance of the membrane against the flow of solvent. The author concludes that in osmosis the solution is restricted to a very thin layer, and the motion in the rest of the membrane is caused by the so-called *free pressure*, which is a negative hydrostatic pressure inside the membrane produced by the osmotic activity in the layer next to the solution. It is shown that for small velocities the free pressure is equal to the osmotic pressure, and that for higher concentrations the free pressure corresponding to the stationary state is equal to the friction pressure necessary to produce a velocity equal to the osmotic velocity.—The laws of mobility and diffusion of the ions formed in gaseous media: E. M. **Wellisch**. Expressions have been deduced from the kinetic theory of gases for the mobility and coefficient of diffusion of an ion, allowance being made for the increase in collision frequency due to the polarisation of the neutral molecules by the charge associated with the ion. This charge is shown to be replaceable, so far as collisions are concerned, by an extension of the sphere of force of the ionic nucleus. The expressions given involve only known physical constants of the gas, and are therefore directly comparable with the values as determined experimentally. It is found that the observed values of the mobilities and diffusion coefficients, as well as certain deviations from the mobility-pressure law, can be approximately explained on the supposition that the ion consists of a single molecule of the gas with which is associated a charge equal to that carried by the monovalent ion in electrolysis.

MANCHESTER.

Literary and Philosophical Society, November 17.—Prof. H. B. Dixon, F.R.S., president, in the chair.—Contributions to a study of the geographical distribution of birds, part i., the genus *Macronyx*, Swainson: F. **Nicholson**. This paper, the first of a series embodying a mass of notes on the Motacillidae (wagtails and pipits)

in the author's possession, the result of several years' work, deals with the genus *Macronyx*, and brings up to date the geographical memoranda detailed by Reichenow and Shelley. *Macronyx* is a purely Ethiopian genus, being confined to the African continent, where the birds are popularly known as "longclaws," from the abnormal development of their claws. They may be divided into two sections, those with a yellow or orange breast and those with a pink breast. *M. croceus*, one of the former, is the most widely distributed, being found over the greater part of Africa. The range of the others is more confined. Nine species in all were enumerated, and the range of each was shown.—The draught-inducing properties of the poker: A. H. **Gibson**. With the view of ascertaining whether there is any scientific basis for the belief that a poker, placed with its lower end against the fender and the other end reared against the bars of an ordinary fire-grate without actually touching the fire, is able to induce a recalcitrant fire to burn up or to burn less smokily, the author undertook a series of experiments, in which the velocity of inflow of air was measured at various points with and without the poker in position. The results showed that the magnitude of the effect was very remarkable. The explanation of the phenomenon appears to be that, when a current of air impinges on a fixed body, eddies are formed on its leeward side, where a region of low pressure (below that of the atmosphere) in consequence exists. There is a tendency to inward flow towards this from all surrounding regions, accompanied by a consequent inward and upward flow towards and along the under side of the poker and towards the fire, this taking place along its whole length, but particularly from its lower end, which is shielded from the direct influence of the draught.—Notes on the spawning of *Eledone* and on the occurrence of *Eledone* with the suckers in double rows: F. H. **Gravely**. The spawning of *Eledone cirrosa* was watched in the aquarium belonging to the Liverpool Marine Biological Committee at Port Erin. The female settles upon a vertical surface, to which she clings with the large suckers of the arms. The siphon directs a jet of water into the oral funnel, and then places the eggs there. They are held by the small suckers near the bases of the arms, and are arranged by these in a bunch, the free ends of their individual stalks being fastened by means of a glutinous secretion into a central cord, by which they are united together. When the bunch is completed its strength is tested by the parent, and then it is left. At first it is white throughout, but the central cord, and the disc of hardened glutinous material, by means of which this is attached to the substratum, very soon becomes green, probably through the growth of an alga. The genus *Eledone* can usually be distinguished from the genus *Octopus* by the arrangement of the suckers on each arm in one row in the former, but in two rows in the latter.

PARIS.

Academy of Sciences, November 23.—M. Bouchard in the chair.—The spectrum of the Morehouse comet: H. **Deslandres** and J. **Bosler**. This spectrum has been studied at Meudon with two different forms of apparatus, the prismatic chamber and the ordinary spectroscope with slit; the present note deals chiefly with the results obtained with the latter. Besides the principal bands of nitrogen and cyanogen, there are three bands of unknown origin, λ 456.1, 426.7, and 401.3, noticed for the first time in the Daniel comet of 1907. All these, together with two others (λ 453.1 and 470.0), have proved to be doublets. The cause of this is discussed, and the conclusion arrived at that this cannot be attributed to a Zeeman effect, the application of Doppler's principle giving the best explanation of the phenomenon.—The influence of isolated multiple points on the number of double integrals of the second species of an algebraic surface: **Emile Picard**.—A new method for determining position at sea: **E. Guyon**.—M. Bouty was elected a member of the physical section in the place of M. H. Becquerel.—Algebraic surfaces which represent pairs of points of the curve of genus three: **L. Remy**.—The geometrical applications of certain remarkable movements: **J. Haag**.—Differential equations and systems of reservoirs: **Edmond Maillet**.—The ratio

of the charge to the mass of electrons. The comparison of the values deduced from the Zeeman phenomenon and recent measures on the cathode rays: A. **Cotton** and P. **Weiss**. All the lines of metals in Mendeléeff's second group, which belong to the second secondary series, have a single constant $K = \delta(\lambda)/H\lambda^2$, which completely defines the magnitude of the Zeeman phenomenon. The authors' values for zinc give $K = 1.875 \times 10^{-4}$, and this, applying Lorentz's calculation, leads to $e/m = 2 \times 1.767 \times 10^7$. A recent measurement by M. Classen, made with cathode rays of low velocity, gives $e/m = 1.773 \times 10^7$, exactly half that deduced from the Zeeman phenomenon. On the other hand, a recent study by Lohmann of the triplets formed in a magnetic field by the helium lines gives a value $e/m = 1.77 \times 10^7$, identical with Classen's figure. The concordance of these results with Lorentz's views affords a striking example of the power of the electron theory in connecting phenomena apparently entirely different.—The kinematographical study of the backwash and stream lines produced by the motion of an obstacle: **Henri Bénard**.—The atomic weight of silver: A. **Leduc**. A criticism of the conclusions drawn by Dubreuil in a recent note on the same subject.—The borotungstic acids: H. **Copaux**. A detailed account of the preparation and analysis of the two acids $B_2O_3 \cdot 28TuO_3 \cdot 62H_2O$ and $B_2O_3 \cdot 24TuO_3 \cdot 66H_2O$. The former has a molecular weight of 7682, possibly the highest of any known inorganic substance.—The action of antimony trichloride on nickel: Em. **Vigouroux**. These two substances interact with incandescence at $800^\circ C.$, with the ultimate production of crystals of NiSb. The physical and chemical properties of NiSb are given in detail.—Study of the tartrates of the fatty and aromatic amines in the state of solution, making use of the rotatory power: J. **Minguin** and Henri **Wohlgemuth**.—The preparation of *o*-azocarboxylic acids: P. **Freundler** and M. **Sevestre**.—The theory of the preparation of methylamine by solutions of acetamide and bromine: Maurice **François**. The author holds that the bromacetamide of Hofmann does not exist in solution, and explains the formation of methylamine as the result of an oxidation of the carbonyl group in $CH_3 \cdot CO \cdot NH_2$ by hypobromous acid or free bromine in presence of alkali.—The humic materials in coals: O. **Boudouard**. Humic acid has been isolated from various kinds of coal by treatment with aqueous potash solution, with or without previous oxidation by nitric acid. Analyses and approximate formulæ for the humic acids thus obtained are given.—Antique red porphyry: J. **Couyat**.—The quantitative control of work on chlorophyll: V. **Brdlik**.—The physiological mechanism of the coloration of red grapes and the autumnal coloration of leaves: J. **Laborde**. Tannin extracted from different parts of the vine, on exposure to the sun in solution containing small quantities of hydrochloric acid and formaldehyde, develops a deep red colour, and the author attributes the natural colour changes in both fruit and leaf to the alteration of the tannins present in these organs.—The physiological study of some alkaloids of hemlock (*Conium maculatum*): J. M. **Albahary** and K. **Löffler**.—New contribution to the study of the serum of animals after removal of the thyroid gland: L. **Launoy**.—Note on a map indicating the oceanographical distribution of marine plants in the Roscoff region: L. **Joubin**.—Studies on cancer in mice: L. **Cuénot** and L. **Mercier**.—Experimental growths, and, in particular, the production of a supplementary head in *Saccocirrus*: Aug. **Michel**.—The age of the iron ores of the forest of Lorges (Côtes-du-Nord): F. **Kerforme**.—The distribution of *Halobia* in the western Peloponnesus: Ph. **Négris**.—Continuous luminous effluvia during a storm at the island of Lifou: M. **Nicolas**.—A particular class of sea bottom near Thau: L. **Sudry**.—Earthquake shocks at Constantine: P. **Martel**.

CAPE TOWN.

Royal Society of South Africa, October 21.—Mr. S. Hough, F.R.S., president, in the chair.—Note on the structure of Tygerberg, Prince Albert: Dr. A. W. **Rogers**. In 1906 Dr. Sandberg published a paper throwing doubt on the anticlinal structure of Tygerberg as described by Mr. A. R. Sawyer and Prof. Schwarz. The present author spent a week in the country between Prince Albert and

the east end of the Tygerberg, in order to study the evidence for Dr. Sandberg's views. It seemed to him that the anticlinal structure of the range was clear, for at many places in it the Witteberg beds were seen to dip under the Dwyka on either side. The masses of quartzite in the Dwyka described by Dr. Sandberg appeared to be parts of that formation, *i.e.* originally sandy sediments with few or no pebbles, formed at the same time as part of the tillite. Similar quartzites in the Dwyka had been described from several localities in the south of the colony. An examination of Sand River valley showed not only that it was extremely unlikely that a mass of Witteberg beds underlay the surface, for those beds were not known to form valleys like that of Sand River, but that where outcrops of rock *in situ* occurred they belonged to the Ecce series. He had come to the conclusion that it was unnecessary to assume the presence of a great overturned fold to account for the appearances at Tygerberg, and that the earlier observers were quite justified in ascribing an anticlinal structure to the range.

DIARY OF SOCIETIES.

THURSDAY, DECEMBER 3.

- LINNEAN SOCIETY, at 8.—Biscayan Plankton, the Ostracoda: Dr. G. Herbert Fowler.—Note on *Juviparus saxifolia*, Hook. and Arm.: Bunzō Hayata.—Mimicry in Spiders: R. I. Pocock.
- RÖNTGEN SOCIETY, at 8.15.—Phenomena observed in Electrical Currents of Continuous Oscillation: Dr. H. Manders.
- CIVIL AND MECHANICAL ENGINEERS' SOCIETY, at 8.—The Influence of Track upon Railway and Tramway Carriages: J. S. Warner.

FRIDAY, DECEMBER 4.

- GEOLOGISTS' ASSOCIATION, at 8.—Personal Experiences of the Jamaica Earthquake of 1907: Dr. Vaughan Cornish.
- INSTITUTION OF CIVIL ENGINEERS, at 8.—The Design and Erection of a Plate-girder Bridge over the River Lee, at Broxbourne: L. W. Atcherley.
- MONDAY, DECEMBER 7.
- SOCIETY OF CHEMICAL INDUSTRY, at 8.—Cellulose and Chemical Industry: C. F. Cross and E. J. Bevan.
- ROYAL SOCIETY OF ARTS, at 8.—Twenty Years' Progress in Explosives: Oscar Guttman.
- ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—The Danish North-east Greenland Expedition: Lieut. A. Trollé.
- VICTORIA INSTITUTE, at 4.30.—Geneva and Chamounix of To-day as compared with half-a-century ago: Prof. Edward Hull, F.R.S.

TUESDAY, DECEMBER 8.

- ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.15.—Notes on Early Ornament: Dr. C. H. Read.—The Lushai-Kuki Clans: Lt.-Col. J. Shakespear.
- INSTITUTION OF CIVIL ENGINEERS, at 8.—The Rotherhithe Tunnel: E. H. Tabor.

WEDNESDAY, DECEMBER 9.

- ROYAL SOCIETY OF ARTS, at 8.—Kinematography in Natural Colours: G. Albert Smith and Charles Urban.

THURSDAY, DECEMBER 10.

- ROYAL SOCIETY, at 4.30.—*Probable Papers*: On Reciprocal Innervation of Antagonistic Muscles. XIIth Note: Proprioceptive Reflexes. XIIIth Note: On the Antagonism between Reflex Inhibition and Reflex Excitation: Prof. C. S. Sherrington, F.R.S.—Electrolytes and Colloids. The Physical State of Gluten: Prof. T. B. Wood and W. B. Hardy, F.R.S.—On the Specific Heats of Air and CO at Atmospheric Pressure by the Continuous Electric Method at 20° and 100° C.: W. F. G. Swann.—Potential Gradient in Glow Discharges from a Point to a Plane: J. W. Bispham.—The Extension of Cracks in an Isotropic Material: A. Mallock, F.R.S.—Results of Magnetic Observations at Stations on the Coasts of the British Isles, 1907: Commander L. Chetwynd, R.N.—The Rotation of the Electric Arc in a Radial Magnetic Field: J. Nicol.—On Anomalies in the Intensity in Diffracted Spectra: H. C. Pocklington, F.R.S.—The Isothermal Layer of the Atmosphere and Atmospheric Radiation: E. Gold.—Contribution to the Osmotic Theory of Solution: The Earl of Berkeley, F.R.S., and C. V. Burton.—A Comparison of the Radium Emanation Spectra obtained by Different Observers: T. Royds.

- INSTITUTION OF ELECTRICAL ENGINEERS, at 8 (*Ordinary General Meeting*).—Output and Economy Limits of Dynamo Electric Machinery: J. C. Macfarlane and H. Burge.—*Probable Paper*: Commercial Electric Heating: J. Roberts.

- ROYAL SOCIETY OF ARTS, at 4.30.—The Birds of India: Douglas Dewar.

- MATHEMATICAL SOCIETY, at 5.30.—On the Propagation of Sound Waves Vertically in the Atmosphere: Prof. H. Lamb.—(1) On Sir William Rowan Hamilton's Fluctuating Functions; (2) On the Representation of

a Function by Series of Bessel's Functions: Dr. E. W. Hobson.—Theory of Cauchy's Principal Values (Fourth Paper): G. H. Hardy.—Solution of a Problem of Mersenne's: Dr. T. Stuart.—Note on a Continued Fraction Equivalent to the Remainder after n Terms of Taylor's Series: Prof. L. J. Rogers.—Solid Angles and Potentials of Plane Discs: Balak Ram.

FRIDAY, DECEMBER 11.

PHYSICAL SOCIETY, at 8.

- MALACOLOGICAL SOCIETY, at 8.—On *Carelia pilsbryi*, n.sp.: E. R. Sykes.—The Radulae of British Helicids, Pt. II.: Rev. E. W. Bowell.—New Species of Plectopylis: G. K. Gude.—A Preliminary List of Recent Middlesex Mollusca: J. E. Cowper and A. Loydell.—The Application of the Names Gomphina, Marcia, Hemitapes and Katelysia: A. J. Jukes-Browne.

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